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Comparative Anatomy being a notable exception. This palæontology will consist of two volumes, and will, when completed, be a valuable work of reference, though almost entirely based on European forms.

MISS BALLARD'S INSECT LIVES.¹—This attractive little book deserves commendation from the fact that the authoress has evidently the zeal of a genuine naturalist, has studied insects in the field and closet, and describes what she has seen in a clear and admirable manner. The first and best lesson in the study of insects is the rearing of a butterfly from the egg; one learns more of entomology in this than by any other method. This book will, we feel sure, induce boys and, we hope, girls to gather caterpillars and rear butterflies just for the fun of the thing, while unconsciously they will be learning valuable lessons in observing natural objects. We have no fault to find with the illustrations, which are beautiful, and generally, when original, accurately, as well as artistically drawn, while those which are copied from the best entomological artists, are faithfully done; some, however, are evidently electrotypes from Harris, Riley, etc. We notice an error on page 11. The spinneret, in caterpillars, is situated on the *under* not the *upper* lip, the silk glands passing into the floor of the mouth and opening through the labium. We heartily endorse the advice to those beginning the study of insects that "we should not begin with statistics—studying how many thousands of moths and butterflies there are supposed to be, or how many species of insects have been classified and named. Take 'one to begin,' as children say, and study it thoroughly."

GRABER'S INSECTS.²—We have already drawn attention to the first two parts of this admirable work, and the commendations then bestowed upon it will apply to the present part. The biology of insects is concluded by chapters relating to the reproductive habits of insects, parthenogenesis and certain anomalous modes of reproduction, and to their powers of destruction. The author evidently belongs to the German ultra-Darwinian materialistic school, and claims, to use his own words, that: "It is the grand, free idea of the present age, which acknowledges the existence outside of and above nature of no power *and in general no being*, that all existing, all physical and psychical phenomena may be explained by the active causes in nature, and that the individual is not necessary for the preservation and harmonious develop-

¹*Insect Lives, or Born in Prison.* By JULIA P. BALLARD. Cincinnati, Robert Clarke & Co., 1879. Sq. 12mo, pp. 97. \$1.00.

²*Die Naturkräfte.* Eine naturwissenschaftliche Volksbibliothek. XXII Band, 2 Hälfte. Die Insekten. Von Dr. VITUS GRABER. II Theil, 2 Hälfte: Vergleichendes Lebens und Entwicklungsgeschichte der Insekten. Mit 127 original holzschnitten. München, Druck und Verlag von R. Oldenbourg, 1879. 3 marks.

ment of the whole, but all unitedly produced as the resultant of the coöperation of the individual powers of nature."

It is easy for the Austrian professor to give utterance to this dogma, but in the present state of our knowledge we doubt whether such a broad generalization (or narrow conclusion) can be supported by demonstrable facts, and we would urge that, as in human history so in that of the lower animal world, individual effort is all important; the success of certain favored individuals effecting and insuring a progress that ultimately dominates the whole mass of organized beings.

The instances which the author gives of the losses from insect depredations are of a mild order compared with those sustained in the United States, but on the whole the subject is treated in a comprehensive and interesting way. The illustrations of this part, though sometimes too diminutive and not always carefully engraved, are perhaps sufficiently clear for a popular work.

The last part is devoted to the embryology and metamorphoses of insects, and forms a fresh, well illustrated and most convenient treatise on the subject. The works of Weismann, Kowalevsky and others are freely used, and a good deal of valuable original matter introduced; the application of the germ-layer doctrines to insects, the novel illustrations of the embryology of different insects, in which work the author's former experience as a histologist and entomologist has made him an adept, and the schematic drawings to illustrate the process of molting, and the formation of the pupa under the skin of the larva, these and other points appear to have been elaborated with a briefness and clearness of treatment which, with the previous anatomical part, will render the work a standard one for some years to come. Among the illustrations of hitherto unpublished embryological facts are cross sections of the embryo of the flesh fly, of the *Lina populi* beetle, the two diagrammatic drawings of the germ and its embryonal layers; of the embryo of Mantis, and the eggs of the swarm-moth (*Liparis dispar*). The author has attempted to combine the results of different embryologists, and to clearly expound them for the use of the general student in a way which has not hitherto been accomplished. The portion on the metamorphoses of insects is treated in a way not wholly new to the American reader, but the matter, some of which is new, and the valuable and original figures of the longitudinal section of the puparium and enclosed pupa of a muscid fly, the section through the thorax of a *Polistes* wasp, through the head of a caterpillar, and through the thorax of the cabbage-butterfly are original and valuable.

RECENT BOOKS AND PAMPHLETS.—The Genera of European Nemerteans critically revised, with description of several new species. By Dr. A. A. W. Hubrecht. (Note XLIV of the Leyden Museum. 8vo, pp. 193-232.) From the author.

Darwinism and other Essays. By John Fiske, M.A., LL.B., etc. 8vo, cloth, pp. 283. Macmillan & Co., London and New York, 1879.